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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/613,749	07/11/2000	Satoshi Suzuki	400762/AOYAMA	1153

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EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 04/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/613,749

Applicant(s)

SUZUKI ET AL.

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9 and 11-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment

Applicants' amendment filed January 18, 2002 was received in T.C 2800 on January 23, 2002 and entered on January 28, 2002.

Therefore claims 1,2,4-7,9 and 12-13 as amended by the amendment and claims 3 and 8 as recited in the preliminary amendment are currently pending in the application.

It is noted that non-elected claims 14-17 have been cancelled by the amendment.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase, "at least one of the first and second channel regions is narrower than the width of the source electrode adjacent the channel region "as recited includes a channel region that is not narrower than the

width of the source electrode, this limitation is not taught by the specification as originally filed.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui (U.S. Patent No. 5,925,901, herein after Tsutsui) and Tozawa (Japanese Patent Publication No. 43270024 A, herein after Tozawa) both previously applied and, further in view of Taguchi (U.S. Patent No. 5,001,108, herein after Taguchi) and Kobayashi (Japanese Patent publication No. 61-232682, herein after Kobayashi) both newly applied.

With respect to claim 1, in addition to the teachings of Tsutsui and Tozawa previously applied and incorporated in their entirety here by reference for the sake of brevity

The amended claim 1 includes the limitation of " an electrically isotropic compound " semiconductor.

Tsutsui and Tozawa does not specifically mention an electrically isotropic compound semiconductor. .

However, Taguchi, a patent from the same filed of endeavor, describes in col.2 lines 10-12 describes materials employed as electrodes or wirings of semiconductor devices, such as integrated circuits having electrically isotropic characteristics to reduce the electrical resistance of the wiring to almost zero and thus allow signals to reach its destination without delay or degradation of the signal.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Taguchi's electrically isotropic materials in Tsutsui and Tozawa's devices to reduce the electrical resistance of the wiring (substrate) to almost zero and thus allow signals to reach its destination without delay or degradation of the signal which are essential for high power devices claimed. (Taguchi col. 1 lines 35-45)

The added limitation of essentially perpendicular instead of substantially perpendicular.

First of all it is noted that Tozawa fig. 1 A , previously applied shows an identical structure to that shown in applicants' figure one etc. and therefore what is true for applicants'(namely that the first and second channel regions having width directions essentially perpendicular to each other) is also true for Tozawa.

Secondly it is noted that claims contain the wording " comprising" which does not exclude other angles.

However, assuming argeundo that applicants' somehow limit their claims to perpendicular channels the following is presented.

Tsutsui, and Taguchi do not specifically mention the channel regions being only perpendicular.

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However, Kobayashi a patent from the same filed of endeavor, describes in its English Abstract – Purpose section that gate electrodes are bend at 90 degrees with a channel in between also bend at 90 degrees to improve integration and reduce the size of the devices.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to form Kobayashi's first and second channel regions having width directions essentially perpendicular to each other instead of the Tsutsui's and Taguchi's alleged non 90 degree channel regions to improve integration and reduce the size of the devices. (Kobayashi –purpose section)

Claim 2 was amended to change "with" to "to" and no separate arguments for its patentability was stated. Therefore , as shown above since claim 1 is not patentable dependent claim 2 is also not allowable.

With respect to claims 4 and 6 , the newly added limitations namely, the fifth and sixth channel regions joining the second/ fourth channel regions and having a width direction essentially perpendicular to the width direction of the second/fourth channel regions wherein the first gate electrode is disposed on the first, second & fifth, and third, fourth and sixth channel regions and are bent at the first/second bending portions and at a third/fourth bending portions respectively (Tsutsui col. 3 liens 59-64, six sets of Fets therefore six set of channels and the connections as set out in figures 7 and 8) .

First and second insulating regions on the semiconductor first and second bending positions of the first and second gate electrodes and under the third and fourth

bending positions of the first and second gate electrodes, respectively. (Tsutsui fig.s 7 and 8).

With respect to claim 7, Applicants' have attempted to broaden the claim by stating at least one of the first and second channel regions is narrower than the width of the source electrode adjacent the channel region (see Tsutsui figs 7 and 8).

With respect to claim 9, the added limitation spaced uniformly from each other is the same as previously recited " parallel" and the limitation of the common pad electrode extending across and connected to the first and second gate electrodes (Tozawa fig. 1a).

With respect to claim 12 the only change is from "a" to "the" and therefore the previous rejection is incorporated by reference.

With respect to claim 13, a change similar to claim 1 namely "substantially" is changed to " essentially".

First of all it is noted that Tozawa fig. 1 A , previously applied shows an identical structure to that shown in applicants' figure one etc. and therefore what is true for applicants' (namely that the first and second channel regions having width directions essentially perpendicular to each other) is also true for Tozawa.

Secondly it is noted that claims contain the wording " comprising" which does not exclude other angles.

However, assuming arguendo that applicants' somehow limit their claims to 45 degrees the following is presented.

Tozawa I fig.1 a as stated previously shows the recited 45 degree between the first electrode width direction and the active region.

Response to Arguments

Applicant's arguments filed 1/28/2002 have been fully considered but they are not persuasive. for the following reasons :

The arguments with respect to claim 1 have been fully discussed above.

With respect to claims 4 and 6 in addition to the above discussion, it is noted that figure 8 of Tsutsui is the section taken along line VIII-VIII of figure 7 therefore both figures 7 and 8 are relevant and cited/applied as such.

With respect to claim 8 applicants' hypothesis that Tozawa's described parts being superfluous is argument without merit and not persuasive.

With respect to claim 9, Tozawa clearly shows in at least fig. 1a the recited device.

With respect to claims 12 and 13, in addition to the above the newly applied reference clearly makes the argument moot.

It is not clear how applicants' have amended the claims in response to the office action and argued at length the added limitations being different from the references and then conclude their remarks by a blanket statement the same Office Action ahs failed to establish prima facie obviousness.

Therefore all of applicants' arguments have been fully considered and found not persuasive.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is 703-306-5945. The examiner can normally be reached on M-F, 8.00 to 5.00.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703- 308-0956.

Steven H. Rao

Patent Examiner


4/3/02


Jerome Jackson, Jr.
Primary Examiner